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IN FOUR SECTIONS

Section I

LIBRARY

A Standard Cost System For a Cotton Mill

By

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Atlanta, Georgia

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EDITORIAL DEPARTMENT NOTE

Several times recently the Editor has been asked for information relative to a cost accounting system for cotton mills. The development of accounting in this field of industry has not been very great; therefore, not a great deal has been written or published on the subject. We feel that we are presenting in this issue of our Bulletin a very worthwhile contribution, especially to those members interested in the cotton industry. This paper presents in a clear and understandable way many of the problems confronting cotton mill executives, and suggests means of definitely controlling some of these problems through the use of standard costs.

Mr. E. G. Field, the author of this article, was graduated from the Rhode Island State College, Kingston, R. I., in 1916 with the degree of B. S. in Mechanical Engineering. He received his industrial training under H. L. Gantt, while engaged with the management problems of several prominent companies.

Following war service as a civilian at Frankfort Arsenal, Bridesburg, Pa., and the Naval Aircraft Factory, Philadelphia, Pa., he entered private industrial practice, devoting attention to economic production and the solution of management problems. In a few years he returned to professional practice, this time on the system staff of a large New York accounting firm. Engagements that required most of his time in Southern States resulted in the establishment of his residence in Atlanta in 1928 and his present connection.

He is a member of the American Society of Mechanical Engineers, the Taylor Society and the N. A. C. A.

This paper was delivered before the Atlanta Chapter, N. A. C. A. at its October meeting.

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DECEMBER 1, 1931

A STANDARD COST SYSTEM FOR A COTTON MILL

THERE has been so much talk about Standard Costs in the last ten years that many people think of them as something quite modern. It so happens that the essential features of standard costs have been known for a long time, but the application of standards as a part of the accounting procedure has been a development of recent years.

Underlying all manufacturing costs there may be observed two general types: (1) job work, and (2) continuous processing. The first type was a natural development of contract or specific order where all the parts or components were delivered directly to the job and its complete and single identity was maintained. Examples of the job plan might include the making of a special mechanical device, the cutting and making of a dozen dresses, and the building of a house. The second type was also a natural development following the method of producing various finished products from the same or like raw materials and especially when those raw materials were not identified by any specific finishing order at the time that the raw materials were started in process. For examples of the continuous process industries, reference may be made to flour mills, soap works, where the work goes through continuously, although there may be different mixtures or blends, various treatments in late operations, and entirely distinct branding, put-ups, etc.

There are a great number of industries that fall between the two major types, and the cost system may be a combination using one type for some products or operations and the other type for other operations. Among the textiles, such as silk, wool, cotton and rayon, both types will be found. In most instances the basic preparation will follow the continuous processing while the manufacture into consumer products may follow the job plan. When working with expensive materials, such as silk, a job identity will be used. The low priced materials, such as cotton, may be batched by lot, but generally do not maintain a fixed identity. In many cases where a job identity exists, the cost system uses the job data but follows a procedure originally developed for the continuous processing industry.

Most cotton mill work follows the continuous process plan.

Cotton from the bale goes into the first preparatory operation and then advances through the several operations that begin to divide the processing according to the final products wanted. Within the practical limitations of the cotton staple, grade, and character, and the mechanical limitations of equipment, the cotton may be spun into a variety of yarns which in turn may be brought together to make a great variety of individual fabrics.

While you may not be acquainted with the many manufacturing operations, you have undoubtedly heard about the many machines that may be tended by an operative. This adds a second complication for the cost man to consider since the time of one operative may be distributed over a group of machines making several different products, using different delivery speeds, and requiring different relative amounts of attention. A third complication is brought about by the highly specialized working organization in which several men have something to do with the same machines but will not be limited to the same number of machines.

Going back a good many years to the time when mills were smaller establishments and made a very limited number of products, the costs were computed by averaging the expenditures in application to the pounds of output. When changes were made in the product, the average cost was affected. From experience and engineering study there were developed a set of rules for pricing the several products according to the departures from the average. Today the buyers largely follow the established differentials between products, and a large number of manufacturing establishments continue satisfied to use average costs toned up or down according to custom. Thus it is, that many mills may be readily mislead into taking business at less than their article-costs, were they really known.

The development of better costs has followed the will of progressive mill executives who have desired to know the facts about costs and the proper differentials between products. The first step from average costs was to set up estimates, or thoughtful calculations, which later were adopted and have become a part of the accounting procedure in progressive plants.

Descriptions

In practice any use of advance computation of costs seems to

go under the name of standard costs so it will be well to distinguish the three more prevalent systems: (1) A technical computation of the costs may produce standard or predetermined costs to be used for considering the sale of merchandise, for selecting product lines to be made, for considering changes in plant facilities, etc., but it will have no part in the accounting procedure, (2) Parts of the predetermined costs may be used in the accounting to develop figures for the inventory and the cost of sales, while all the variations from standard will be collected in specific accounts carried to profit and loss, and (3) Technically computed standard costs are used as a basis for comparison with experienced costs developed by operations, processes, products, etc., and through the use of the standard costs the variances will be carried into the final product costs and so participate directly in both inventories and the cost of sales.

This last plan of cost accounting offers many more advantages for effective use by alert management in that the cost work becomes a tool of management and is of direct aid to both cost control and cost reduction. It is this type of standard cost system that we will briefly examine.

The product naturally divides itself into these major costs components: the raw material, cotton, the processing labor and expense, and the selling, general, and financial expenses necessary to place the finished goods in the hands of customers. A complete cost plan must include all these items. For use in considering quotations it is customary to develop the cost-over-cotton and then add the cotton cost to obtain a current cost figure. In describing the features of the procedure, that arrangement of the quotation cost will be followed.

The mill cost includes the cotton and the labor expense necessary to produce the goods ready to load into the freight car for shipment to the customer. This manufacturing cost is divided into two parts: process labor and mill expense. Process labor includes both the direct labor and the indirect labor in the processing operations. This treatment of indirect labor keeps that part of the cost out of the expense rate and permits of a better control over the labor item, which is of great consequence in the textile industry.

The mill expense includes the labor in the service departments, supplies, repairs, power, light, heat, water, steam, depreciation,

property taxes, plant insurance, compensation insurance, and the distributed expense of the service departments.

The Standards

In preparing the several standards for a cost system it is necessary to consider the relation of the standards required. There are five basic standards:

(1) Standard Budget of Mill Expense at a normal or selected capacity.
(2) Standard Cost Rates of Production, Labor, and Expense for each product of every operation.
(3) Standard Fabric Costs for each of the individual products.
(4) Standard Budget of General and Financial Expenses to operate at a normal or selected capacity.
(5) Standard Material Costs for the several qualities entering into the products.

In Illustration "1", Mill Expense Budget, there is presented a hypothetical budget of the mill expenses to operate a given plant at normal capacity. This question of capacity presents an interesting problem because of disagreement of personal opinion and the undue optimism that attends abnormal operations. Several years ago it was commonly contended that the normal should be taken at an average of past experience, five years or so. In the cotton textile industry the average used capacity is below a full single shift, but this varies according to the section of the country and the line of products. Print cloths continue to be made on a day and night run, while sheetings are made with overtime to balance production. With the competition of prices it is necessary to take a normal that will bring the costs closest to the sales condition expected. There is much that might be said about this weakness of business for it is a well known fact that the benefits from larger volume of business are passed on to the consumer and then, when the volume shrinks as in a period of depression, it is necessary to sell goods at a loss until an economic readjustment can be brought about finally.

In the illustration shown, the annual normal capacity was taken as a single shift of 55 hours per week for 50 weeks in the year, or 275 days of ten hours each. The several operations in each room are listed and the distribution of expenses is shown. Each class

ANNUAL MILL EXPENSE BUDGET

RECAPITULATION OF MILL EXPENSE - ANNUAL

275 Days of 10 Hours Each

Department and Operation	Service Labor, and Superintendence	Supplies and Sundry Expense	Maintenance and Repair Materials	Special Departmental Purchases	Power and Light	Heat, Water, and Steam	Shop Labor and Expense	Depreciation Taxes, and Insurance	Share of Service Departments	Total
Carding:										
Opening	$ -	52.	107.	-	487.	68.	90.	618.	280.	1,882.
Pickers, Breaker	-	60.	204.	-	601.	58.	113.	689.	278.	2,003.
Finisher	-	73.	271.	-	718.	63.	150.	865.	340.	2,478.
Cards	-	371.	1,633.	-	2,995.	173.	940.	4,584.	1,676.	12,372.
Drawing	-	104.	150.	-	846.	65.	710.	1,821.	513.	3,392.
Slubbers	-	79.	257.	250.	805.	67.	181.	932.	369.	2,850.
Intermediates	-	129.	456.	360.	874.	104.	272.	1,841.	616.	4,572.
Speeders	-	297.	1,136.	500.	1,567.	225.	636.	3,540.	1,786.	10,121.
	-	1,165.	4,514.	1,500.	8,763.	861.	2,539.	13,908.	6,160.	39,370.
Spinning:										
Spinning, Filling	-	709.	1,029.	1,250.	6,617.	246.	1,210.	6,035.	2,812.	19,907.
Warp	-	998.	1,420.	1,750.	7,683.	321.	1,675.	8,283.	3,644.	25,852.
Spoolers	-	75.	56.	500.	277.	43.	60.	454.	779.	2,244.
Warpers, L. S.	-	74.	55.	-	356.	43.	55.	399.	305.	1,287.
	-	1,814.	2,568.	3,500.	14,873.	652.	3,000.	15,151.	7,540.	49,092.
Weaving:										
Slashers	-	97.	132.	7,000.	748.	7,087.	150.	964.	508.	16,706.
Drawing and Tying In	-	69.	116.	-	86.	51.	125.	658.	771.	1,446.
Looms 40" E	-	529.	969.	2,025.	2,864.	149.	1,022.	5,604.	2,472.	15,631.
48" E	-	274.	549.	1,150.	1,549.	150.	593.	3,057.	1,356.	8,650.
52" E	-	411.	791.	1,650.	2,131.	245.	846.	4,472.	1,961.	12,493.
60" E	-	386.	787.	1,675.	1,995.	199.	854.	4,345.	1,955.	12,196.
	-	1,753.	3,364.	13,500.	9,395.	8,063.	3,590.	19,104.	8,605.	97,374.
Cloth Room:										
Inspection	-	79.	55.	-	270.	66.	36.	487.	564.	1,590.
Brushers	-	56.	50.	-	491.	53.	52.	360.	222.	1,270.
Folder and Baler	-	54.	42.	1,700.	256.	53.	30.	327.	171.	2,632.
Roll and Burlap	-	44.	13.	2,800.	18.	53.	-	203.	162.	1,293.
	-	233.	160.	4,500.	1,034.	245.	103.	1,377.	1,142.	8,794.
Process	-	4,965.	10,600.	23,000.	34,025.	9,821.	9,232.	49,540.	23,447.	164,630.
Service:										
Shop	5,825.	2,235.	500.	-	261.	-	9,232.*	411.	-	-
Boiler Room	1,845.	100.	200.	4,500.	2,320.	9,821.*	-	961.	-	-
Yard and Warehouse	5,110.	-	-	-	145.	-	1,000.*	2,216.	6,475.*	-
Village	-	-	1,500.	5,000.*	45.	-	1,000.	6,494.	4,039.*	-
Mill General	3,000.	2,000.	1,400.	5,500.	36.	-	-	615.	12,549.*	-
Store	2,450.	-	-	5,600.*	52.	-	-	360.	582.*	-
	16,065.	4,335.	3,600.	2,550.	2,893.	9,821.*	9,232.*	11,057.	23,447.*	-
Total Mill	$ 16,065.	9,300.	14,200.	25,550.	36,918.	-	-	60,597.	-	164,630.
Reference to Exhibits	B-10	B-5	B-6	B-7	B-8	B-19	B-6	B-9	B-11	B-1

Note: * - Red or Credit.

FIGURE 1

ANNUAL MILL EXPENSE BUDGET

SUMMARY AND EQUIPMENT RATES

	Annual Budget					Annual Capacity		Equipment Rates per Unit Day		
	Direct Labor	Indirect Labor	Process Labor	Departmental Expense	Total	Unit Days	Size of Unit	Direct Labor	Indirect Labor	Departmental Expense
Carding:										
Opening	$ 622.	120.	642.	1,582.	2,224.	275	Machines	$ 1.898	.436	5.753
Pickers, Breaker	550.	125.	675.	2,003.	2,678.	550	Machines	1.000	.185	3.641
Finisher	688.	158.	846.	2,478.	3,324.	1,650	Machines	.417	.095	1.502
Carding	3,740.	855.	4,595.	12,372.	16,967.	19,250	Machines	.194	.044	.643
Drawing	1,400.	412.	2,212.	3,392.	5,604.	297	100 Deliveries	6.060	1.387	11.421
Slubbing	2,250.	512.	2,762.	2,850.	5,612.	865	100 Spindles	2.601	.591	3.295
Intermediates	3,400.	1,005.	5,405.	4,572.	9,977.	3,718	100 Spindles	1.183	.270	1.230
Speeders	9,000.	2,058.	11,058.	10,121.	21,179.	9,327	100 Spindles	.965	.221	1.085
	22,950.	5,245.	28,195.	39,370.	67,565.					
Spinning:										
Spinning, Filling	11,500.	3,223.	16,723.	19,907.	36,630.	26,576	100 Spindles	.508	.121	.752
Warp	15,660.	3,737.	19,397.	25,652.	45,049.	36,762	100 Spindles	.426	.101	.698
Spooling	9,000.	2,148.	11,148.	2,246.	13,394.	2,640.	100 Spindles	3.409	.813	.851
Warping, L. S.	2,300.	550.	2,850.	1,287.	4,137.	3,025	Machines	.760	.182	.425
	40,460.	9,658.	50,118.	49,092.	99,210.					
Weaving:										
Slashing	2,998.	-	2,998.	16,706.	19,704.	825	Machines	3.633	-	20.250
Drawing & Tying In	2,887.	-	2,887.	1,448.	4,335.	550	Machines	5.249	-	2.633
Looms 40" E	6,300.	4,860.	11,160.	15,851.	27,011.	56,100	Machines	.112	.086	.283
48" E	3,875.	3,010.	6,885.	8,680.	15,565.	30,250	Machines	.128	.099	.287
52" E	4,850.	3,960.	8,810.	12,493.	21,303.	41,250	Machines	.118	.096	.301
60" D	5,810.	4,635.	10,445.	12,196.	22,641.	39,050	Machines	.149	.119	.312
	26,720.	16,465.	43,185.	67,374.	110,559.					
Cloth Room:										
Inspection	3,752.	3,042.	6,794.	1,596.	8,390.	1,925	Machines	1.949	1.580	.829
Brushers	1,375.	-	1,375.	1,270.	2,645.	550	Machines	2.500	-	2.309
Folder & Baler	633.	-	633.	2,632.	3,265.	275	Stands	2.301	-	9.571
Roll Burlap	1,155.	-	1,155.	3,296.	4,451.	550	Stands	2.100	-	5.993
	6,915.	3,042.	9,957.	8,794.	18,751.					
Process	$ 97,045.	34,410.	131,455.	164,630.	296,085.					
Reference to Exhibit	"B-10"	"B-10"	"B-10"	"B-4"	"B-2"	"B-21"				

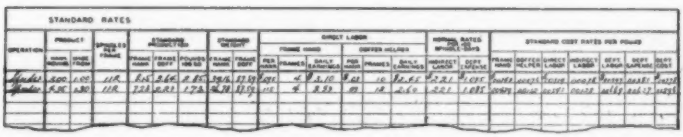
FIGURE 2

of expenses would be supported by a detailed exhibit fully demonstrating how the expenses were applied to each of the processing operations.

The total annual expenses are then reduced to the amount of expense per equipment unit, as presented in Illustration "2", Equipment Rates. Here the normal processing payroll is also shown. The annual capacity expressed in equipment-units is divided into the annual expenses to determine the normal equipment rates to operate each machine-day of ten hours, each 100 spindle-days, etc.

While the budget work is being done, the operating features of machine speeds, delivery factors, machines per operator, piece rates, etc. can be collected. At the start, the actual operating conditions may be taken as standard. There is no reason to go into an argument about the proper standard when the cost work can be used to develop new and better standards by demonstrations that are conclusive. The technical considerations that should be given to setting standards are usually beyond the immediate scope of the accountant, who must cooperate with the superintendent and overseers in collecting the data necessary.

Illustration "3", Standard Rates, shows a hypothetical example of the way in which the operation standard rates may be finally set down for all interested parties. In practice it is surprising to


STANDARD RATES

OPERATION	PRODUCT		SPEED IN FEET PER MINUTE	STANDARD ALLOWANCES			STANDARD WEIGHT		DIRECT LABOR						NORMAL RATED PRODUCTION PER MACHINE HOURS		STANDARD COST RATES PER POUND					
									FRAME HAND			DEFTER HELPER										
	WORK NUMBER	MADE FROM		FRAME HAND	FRAME DEFT	POUNDS PER 100	FRAME HAND	FRAME DEFT	PER HAND	FRAMES	DAILY EARNINGS	PER HAND	FRAMES	DAILY EARNINGS	INDIRECT LABOR	DEPT EXPENSE	FRAME HAND	DEFTER HELPER	DIRECT LABOR	INDIRECT LABOR	DEPT EXPENSE	DEPT MATERIAL	DEPT COST
Grinder	200	100	115	8.0	5.66	8.85	396	17.19	401	4	$2.10	401	10	$2.61	$.221	$.077	Grinder	Grinder	Grinder	Grinder	Grinder	Grinder	Grinder
Grinder	5.00	4.50	115	7.28	5.01	7.74	4.78	13.19	115	4	2.59	115	10	2.60	.221	1.081	Grinder	Grinder	Grinder	Grinder	Grinder	Grinder	Grinder

FIGURE 3

see the many cost weaknesses and inequalities that are observed when the standard rates for each product of every operation are subjected to comparative examination and consideration of what can reasonably be expected. The illustration displays the facts about the production expected, the direct labor cost, the indirect labor cost, and the mill expense cost. The direct labor is directly developed from the piece rates used or their equivalent, while both the indirect labor and the departmental expense are computed by use of the equipment rates per unit day.

These operation standard rates are used for two major purposes: first, to measure the actual performance and thereby develop the experienced relations of actual to standard; and second, to combine together costs of fabrics according to the way in which the various operations contribute to the making of each individual product. The procedure of using standards will be explained later.

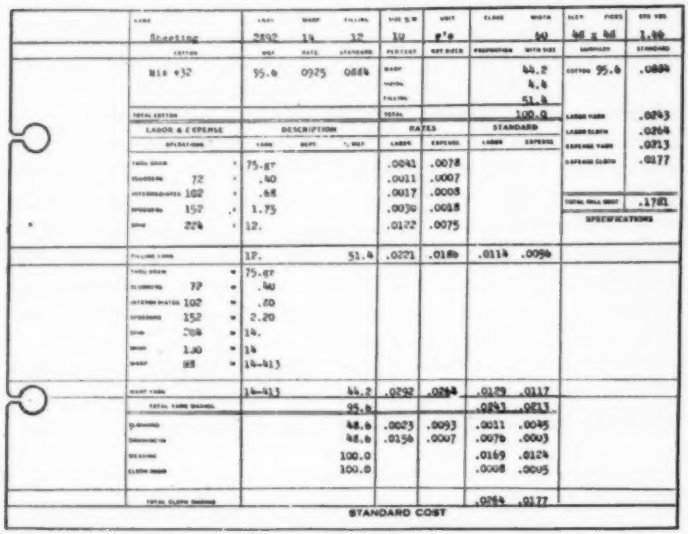


FIGURE 4

An example of the fabric cost is given in Illustration "4", Standard Cost. It is first necessary to make an analysis of the fabric and set down the width, picks, sley, weight, warp yarn number, filling yarn number, type of weave, quality, etc. In dealing with specialties it will often be necessary to make laboratory tests for breaking strengths, twist, sizing, etc. to determine any special features that will be required. The accountant is seldom qualified for this technical work and usually must rely upon the agent, designer, or overseer. Given the construction facts, the accountant can prove the accuracy of the combination by computing the weight. Then it is a simple matter to determine the percentages of contribution and complete the fabric cost by use of the operation

standard rates. Attention is directed to the fact that the labor cost now includes both the direct and the indirect workers.

It is usually desirable to prepare a budget of the expenses to be deducted from gross profit. This is especially useful to set out the intended limitation of expenses to a normal or selected capacity. The deducted expenses consist of three groups: (1) selling, (2) general, and (3) finance. If a selling agent is used, most of the selling expense will be on a commission basis and vary directly with the total sales dollars. The general expenses will include executive and office salaries not otherwise applied, traveling expense, office supplies, donations and dues, sundry expense, etc. The financial expense will include the various interest charges and credits.

Now for a few words about the materials. There are some people who contend that such fluctuating prices as apply to cotton make it impossible to use standard material costs. Undoubtedly that is a marked difficulty in many procedures and especially in systems that compute costs as a side event, not a part of the accounting, or that would carry the accounting at standard and throw off all variances from standard into dumping accounts.

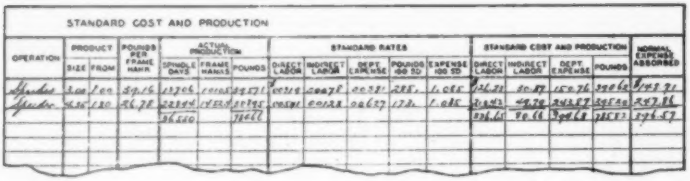
A basic standard price for cotton can be selected for 7/8 inch or better, low middling or better, as used in market quotations. Experienced additions or deductions as differentials included in the "basis" are then applied to specify the material standard costs by grades. The mixtures, as batched to give the required yarn qualities, may then be computed and the mixture standard prices will be a matter of record. These standards will be used in the fabric costs according to the mixture and content of cotton in the cloth.

Actual Costs

Since the entire cost procedure rests upon the standards just described, the quality of those standards is of great importance and most attention must be given to them. However, the practical use of the standards also requires careful consideration of routine procedure.

Daily reports from each operation are sent to the office and summarized weekly for the cost work. The production of each operation is costed for direct labor, indirect labor, and mill expense to

determine the standard measures of the work performed. Illustration "5", Standard Cost and Production, presents an example.



STANDARD COST AND PRODUCTION

OPERATION	PRODUCT SIZE	PRODUCT FROM	POUNDS PER FRAME HANK	ACTUAL PRODUCTION SPINDLE DAYS	ACTUAL PRODUCTION FRAME HANKS	ACTUAL PRODUCTION POUNDS	STANDARD RATES DIRECT LABOR	STANDARD RATES INDIRECT LABOR	STANDARD RATES DEPT. EXPENSE	STANDARD RATES POUNDS PER 100 SD	STANDARD RATES EXPENSE PER 100 SD	STANDARD COST AND PRODUCTION DIRECT LABOR	STANDARD COST AND PRODUCTION INDIRECT LABOR	STANDARD COST AND PRODUCTION DEPT. EXPENSE	STANDARD COST AND PRODUCTION POUNDS	NORMAL EXPENSE ABSORBED
Spoolers	3.00	1.00	39.16	11706	11705.9	458731	.0210	.00478	.00521	225.	1.085	246.21	55.99	152.76	498.66	953.91
Spoolers	4.50	1.00	26.78	22894	15258.6	408795	.0142	.00322	.00627	170.	1.085	324.83	73.96	256.37	435.80	790.96
				34,600		867.526						571.04	129.95	409.13	934.46	1744.87

FIGURE 5

The actual payroll is recapitulated for the direct and indirect labor items and compared with the standards computed for that production. For process mill expense to be absorbed in costs, the equipment rates are applied to the capacity actually run. A weekly report, Illustration "6", Payroll-Ratios-Capacity, is prepared showing the cost variances from standard, the cost ratios of actual to standard, and the capacity operated. Attention is directed to the cost ratios for machine usage which tell the effectiveness in the use of equipment by stating the number of machines that were used to do the work that was expected to be done by 100 machine units at the standard delivery rate.

It may be of interest to learn that it is usual to observe that a decrease of 5 to 10% in the labor costs takes place during the installation of a standard cost plan such as is here described. If the plant has not been running overloaded, an increase in production per machine will also be observed. These improvements come from the cooperation of the Superintendent and Overseers, who are quick to understand the calculation of properly arranged standard costs and are glad to see that the results of their efforts are being fairly presented to the management each week. Then, the management can make a study of mechanical equipment and methods to further reduce costs, can examine the possibilities of administrative policies, and can concentrate attention upon manufacturing for profit.

At the close of each month, the periodic accounting is done. Suitable accounts in the cost ledger are used to record the charges to inventories at both actual and standard values, and the charges to departmental expense accounts. Credits are made for the

processing work completed and the final costs are developed. In this book the inventories are determined for use in the balance sheet, the cost of sales produced for the profit and loss statement,

PAYROLLS - RATIOS - CAPACITY

WEEK ENDED APRIL 25, 1931

Department Operation	Actual Payroll	Variances Labor	Variances Departmental	Cost Ratios Labor	Cost Ratios Machine	Cost Ratios Departmental	Capacity Used
Carding:							
Opener	$ 13.75	.84*	3.84*	$ 106.5*	109.9*	109.0*	$ 133.0
Breaker	18.50	.41	7.25*	96.8	116.0*	111.7*	141.0
Finisher	16.70	3.73*	4.84*	129.3*	107.4*	111.1*	136.7
Cards	92.50	17.25	4.79*	84.2	101.3*	97.3	148.2
Drawing	41.85	8.64	6.22*	82.8	107.0*	98.2	139.0
Slubbers	49.25	1.48	46.32	97.0	44.9	64.5	66.4*
Intermediates	91.95	2.12*	2.95*	102.3*	103.7*	103.0*	89.7*
Speeders	180.95	6.69	19.71	96.4	91.9	93.9	112.0
Direct	499.45	27.70	36.14	94.7	96.4	95.8	123.3
Indirect	143.05	11.19	-	92.7	-	92.7	-
Total	642.50	38.89	36.14	94.2	96.4	95.5	123.3
Spinning:							
Spin	514.70	47.02	30.58	91.6	96.9	95.0	107.8
Spool	144.95	19.81	1.61*	86.2	109.6*	92.1	91.0*
Warp	53.75	.66*	1.17*	101.2*	108.6*	102.7*	96.3*
Direct	717.40	66.17	25.80	91.5	97.5	95.0	105.6
Indirect	213.55	17.67*	-	109.0*	-	109.0*	-
Total	930.95	48.50	25.80	95.0	97.5	96.3	105.6
Weaving:							
Slashing	35.05	1.46	28.84	96.0	89.1	89.9	70.9*
Drawing	53.70	2.82	3.05*	95.0	114.8*	100.2*	81.2*
Looms	665.35	81.62	261.34	89.0	79.0	82.7	99.9*
Direct	754.10	85.90	287.13	89.7	81.2	84.2	92.3*
Indirect	224.54	25.18	-	89.9	-	89.9	-
Total	978.75	111.08	287.13	89.8	81.2	84.8	92.3*
Cloth Room:							
Direct	73.75	8.08	12.53	90.1	90.1	90.1	64.9*
Indirect	66.30	24.57*	-	158.8*	-	158.8*	-
Total	140.05	16.49*	12.53	113.3*	90.1	101.5*	64.9*
Mill Total:							
Direct	2,044.70	187.85	361.60	91.5	90.3	90.7	102.2
Indirect	647.55	5.87*	-	100.9*	-	100.9*	-
Process	2,692.25	181.98	361.60	93.6	90.3	91.7	102.2
Service	257.00	66.92	-	79.3	-	79.3	-
Total	$ 2,949.25	248.90	361.60	$ 92.2	90.3	91.1	$ 102.2

Note: * = Red, which is Unfavorable.

FIGURE 6

waste loss factors are obtained, expense control features are produced from the expense accounts, and the experienced cost ratios of actual to standard are provided for executive use and for the figuring of quotation costs.

Perhaps it will be worth while to briefly describe the working of the ratio method of cost development. In each of the inventory accounts these steps are taken:

(1) The debit for the current month is computed at standard and the actual value then picked up along with it for posting to the account at both actual and standard values.

(2) The current debit is added to the previous balance to arrive at the new figures from which there is calculated the new ratio to be applied to the current credit.

(3) The current credit is computed at standard and converted to actual by use of the cost ratio developed in Step No. 2.

This simple mathematical method uses the standard as a working medium to obtain the actual value. The standard values are shown in the accounts as memorandum figures and do not enter into the financial reports. The cost ratios serve to clear the inventory accounts at experienced actual values, the changes in cost ratios give direct information as to the trend of costs up or down, the cost ratios greatly simplify the accounting procedure in a practical manner, and the cost ratios are directly usable to develop quotation costs that are understandable and reasonably accurate.

In developing practical cost ratios it is essential that the waste losses be properly included. When the amount of waste can not be readily determined each month, an estimated yield must be allowed. In accounting for cotton, the resale value of waste can be determined for all the pounds taken out. By deducting this resale value and the total waste pounds at the original cotton standard price, from the original debit, the net ratio will include full effect of the waste loss. This is a distinct advantage in that the account will furnish both the price ratio and the waste factor, and their combination in the cost ratio.

The accounting procedure makes use of a cost ledger under the control of the general ledger to help furnish the information for the monthly reports. It is essential that these reports be promptly placed before the management, but the time of preparation is largely dependent upon the general accounting methods. Usually about a week is allowed, but in some instances the time has been cut to three days after the close of the period.

The monthly reports may include:

(1) Comparative Balance Sheet.

(2) Profit and Loss for Year to date, using book inventories to develop the cost of sales.
(3) Comparative Condensed Profit and Loss for each of the last three months.
(4) Cost of Manufacture for Year to date, using classified expenditures and book inventories.
(5) Cost of Manufacture in last month only.
(6) Comparative Inventories, with production and turnover.
(7) Fabric Profits (Another view of the profit and loss) in the last month showing the sales, cost of sales, and gross profit for each individual product shipped.
(8) Statement of Cost Ratios and Trends.
(9) Report of Waste Made.
(10) Review of Seconds and Shorts by Fabrics.

To which there may be added expense reports for each department and other operating and statistical reports as may be desired.

Facility in making quotation costs using replacement cotton is desirable. By use of a simple cost sheet for each construction, Illustration "7", Quotation Cost, the management will always be ready to consider any prospective business. Here the standard cost has been converted to actual, by use of the developed cost ratios, and the general and financial expenses added, according to experienced relations, to arrive at the cost-over-cotton. The replacement cotton is then applied according to the content and waste factor, and the cost to the mill is known. It is customary to view commission to selling agents as a deduction from the sale price after freight and discount.

Conclusion

It is hoped that this hurried description will give you a better general understanding of a Standard Cost System for a Cotton Mill. No attempt was made to produce an exhaustive or technical treatment of the subject but rather the purpose has been to explain the general working plan and the use of a complete procedure as an effective aid to management.

If business is to be sold at purported market regardless of cost, then quotation costs may not be necessary. Should the management be interested only in quotation costs at other than actual conditions, then estimates may be made without an accounting pro-

DATE	DESCRIPTION		WIDTH	COUNTS	WEIGHT
2-4-32	Sheeting		40	48/48	2.85
REED	WARP	SIZE	W. CONT.	FILL	F. CONT.
21 60	16	1.12	1.07	15	1.11
	SUMMARY		STANDARD	RATIO	ACTUAL
	LABOR YARN		.0196	1.06	.0208
	LABOR CLOTH		.0184	1.04	.0191
	EXPENSE YARN		.0218	1.07	.0233
	EXPENSE CLOTH		.0205	1.03	.0211
	LABOR AND EXPENSE		.0803		.0843
	CAPACITY UNABSORBED				-
	OVER WEIGHT & SECONDS				-
	GENERAL EXPENSE		9.38%	LE	.0079
	FINANCIAL EXPENSE		6.10%	LE	.0051
	COST OVER COTTON				.0973
	GRADE	CONTENT	PRICE	WASTE	ACTUAL
		March	.1123		
		Cff	.0070		
	#32	94.7%	.1053	1.16	.1157
	COTTON				.1157
	SELLING PRICE F. O. B CUSTOMER				
	FREIGHT				
	SELLING PRICE F. O. B. MILL				
	DISCOUNT				
	NET SELLING PRICE AT MILL 07-3/4 x 2.80				.2170
	SELLING EXPENSE				.0055
	NET PRICE TO MILL				.2105
	COST TO MILL				.2130
	NET ~~PROFIT~~ Loss				.0025
	PROFIT BEFORE FINANCIAL EXPENSE				.0026

FIGURE 7

cedure. But modern, alert management wants to know the experienced costs, wants to keep the costs under control, wants to get costs within market prices, wants to continually strive for lower costs, and will always want facts to predetermine the profit that accompanies sound business policies. To these leaders in the textile field, standard costs properly applied are making a worthy contribution.

FIGURES 3 AND 5 REPRODUCED BY PERMISSION OF "COTTON"

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